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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,833	08/30/2001	Gabriel P. Lopez	UNME-0108-1	6872

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EXAMINER

FORMAN, BETTY J

ART UNIT	PAPER NUMBER
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1634

DATE MAILED: 08/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/941,833	LOPEZ ET AL.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-216 is/are pending in the application.
- 4a) Of the above claim(s) 3-15, 19-23, 27-34, 40-44 and 46-216 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 16-18, 35-39 and 45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8/01 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, Claims 1-61 in papers filed 9 December 2002 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 3-15, 19-23, 27-34, 40-44 and 46-61 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in papers filed 9 December 2002.

Claims 3-15, 19-23, 27-34, 40-44 and 46-217 are withdrawn from consideration.

Claims 1, 2, 16-18, 24-26, 35-39 and 45 are pending.

Specification

2. The abstract of the disclosure is objected to because it contains more than 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 36 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 36 is indefinite for the recitation "wherein said siloxy diazonium group comprises p- diazoniumphenyltrimethoxysilane salt" because the open claim language "comprising" permits the claimed group to encompass other elements. However, the group "p- diazoniumphenyltrimethoxysilane salt" is a very specific compound. Therefore, it is unclear what other elements are encompassed by the open claim language "comprising". For purposes of examination the claim is given its broadest reasonable interpretation. In view of the open claim language "comprising", the diazonium group is interpreted to encompass other elements.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application

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filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 16-18, 25-26, 35, 37-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirschfeld (U.S. Patent No. 5,242,797, issued 7 September 1993).

Regarding Claim 1, Hirschfeld discloses a microarray comprising a substrate comprising a primary aromatic amine diazotized surface and at least one biomolecule covalently bound to the primary aromatic amine diazotized surface (Example 1, Column 4, line 50-Column 5, line 10 and Column 6, line 63-Column 7, line 42). It is noted that the instant specification, page 5, defines a microarray. "For the purposes of this invention, the term "microarray" refers to a device that employs the attachment of biomolecules to a substrate."(page 5, lines 7-8). Hirschfeld discloses a device for attachment of biomolecules and therefore teaches the microarray as defined in the specification and as instantly claimed.

Regarding Claim 2, Hirschfeld discloses the microarray wherein the surface comprises a glass surface (Example 1, Column 4, line 50-Column 5, line 10).

Regarding Claim 16, Hirschfeld discloses the microarray comprising a plurality of biomolecules (Column 9, lines 13-19).

Regarding Claim 17, Hirschfeld discloses the microarray comprises a plurality of biomolecules (Column 9, lines 13-19). The instant claim is drawn to at least two different biomolecules. However, the claim does not define how the biomolecule differ. The claims are given the broadest reasonable interpretation consistent with the broad claim language and specification wherein "at least two different biomolecules" is not defined. Hirschfeld teaches a plurality of biomolecules i.e. at least two biomolecules. The biomolecules of Hirschfeld differ in that they are two separate and distinct molecules. The biomolecules of Hirschfeld also differ in that they are covalently bound to different aromatic amines because each aromatic amine can only bind one biomolecule. As such, the biomolecules of Hirschfeld are different as claimed.

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The courts have stated that claims must be given their broadest reasonable interpretation consistent with the specification *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997); *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969); and *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (see MPEP 2111).

Regarding Claim 18, Hirschfeld discloses the microarray wherein the biomolecules are single-stranded DNA (Column 6, line 64-Column 7, line 25).

Regarding Claim 25, Hirschfeld discloses the microarray wherein the diazotized surface comprises a siloxy diazotized surface (Column 5, line 10).

Regarding Claim 26, Hirschfeld discloses the surface comprises glass (Example 1, Column 4, line 50-Column 5, line 10).

Regarding Claim 35, Hirschfeld discloses the siloxy comprises an amine diazonium group (Column 7, line 40-50).

Regarding Claim 37, Hirschfeld discloses the microarray comprising a plurality of biomolecules (Column 9, lines 13-19).

Regarding Claim 38, Hirschfeld discloses the microarray comprises a plurality of biomolecules (Column 9, lines 13-19). The instant claim is drawn to at least two different biomolecules. However, the claim does not define how the biomolecule differ. The claims are given the broadest reasonable interpretation consistent with the broad claim language and specification wherein "at least two different biomolecules" is not defined. Hirschfeld teaches a plurality of biomolecules i.e. at least two biomolecules. The biomolecules of Hirschfeld differ in that they are two separate and distinct molecules. The biomolecules of Hirschfeld also differ in that they are covalently bound to different aromatic amines because each aromatic amine can only bind one biomolecule. As such, the biomolecules of Hirschfeld are different as claimed.

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Regarding Claim 39, Hirschfeld discloses the microarray wherein the biomolecules are single-stranded DNA (Column 6, line 64-Column 7, line 25).

7. Claims 1 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Clark (U.S. Patent No. 6,361,936, filed 8 May 1995).

Regarding Claim 1, Clark discloses a microarray (i.e. high density substrate, Column 2, lines 10-12) comprising a substrate comprising a primary aromatic amine diazotized surface (Column 2, lines 15-24 and Column 5, lines 1-34) and at least one biomolecule covalently bound to the primary aromatic diazotized surface (Column 6, lines 60-67).

Regarding Claim 16, Clark discloses the microarray comprises a plurality of biomolecules (i.e. high density substrate, Column 2, lines 10-12).

Regarding Claim 17, Clark discloses the microarray comprises a plurality of biomolecules (Column 2, lines 10-12). The instant claim is drawn to at least two different biomolecules. However, the claim does not define how the biomolecule differ. The claims are given the broadest reasonable interpretation consistent with the broad claim language and specification wherein "at least two different biomolecules" is not defined. Clark teaches a plurality of biomolecules i.e. at least two biomolecules. The biomolecules of Clark differ in that they are two separate and distinct molecules. The biomolecules of Clark also differ in that they are covalently bound to different aromatic amines because each aromatic amine can only bind one biomolecule. As such, the biomolecules of Clark are different as claimed.

Regarding Claim 18, Clark discloses the biomolecules comprise single-stranded DNA (Column 4, line 35).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 24 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirschfeld (U.S. Patent No. 5,242,797, issued 7 September 1993) in view of Kim et al (U.S. Patent No. 6,534,270, filed 12 April 2001).

Regarding Claims 24 and 45, Hirschfeld discloses a microarray comprising a substrate comprising a primary aromatic amine diazotized surface and at least one biomolecule covalently bound to the primary aromatic amine diazotized surface (Example 1, Column 4, line 50-Column 5, line 10 and Column 6, line 63-Column 7, line 42) wherein the surface comprises a glass fiber (Example 1, Column 4, line 50-Column 5, line 10) but they are silent regarding the thickness of the glass fiber surface. However, the thickness of glass fiber surfaces was well known in the art at the time the claimed invention was made as taught by Kim et al who specifically teach the fibers have a thickness of approximately 1m m (Column 3, lines 14-19). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made that the glass fiber of Hirschfeld was approximately 1 millimeter based on the teaching of Kim et al (Column 3, lines 14-19). Alternatively, it would have been obvious to

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design the glass substrate of Hirschfeld to have a thickness of approximately 1 millimeter based on the teaching of Kim et al wherein the 1 millimeter thickness provides a functional surface for biomolecule binding (Abstract).

10. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirschfeld (U.S. Patent No. 5,242,797, issued 7 September 1993).

Regarding Claim 36, Hirschfeld discloses a microarray comprising a substrate comprising a primary aromatic amine diazotized surface and at least one biomolecule covalently bound to the primary aromatic amine diazotized surface (Example 1, Column 4, line 50-Column 5, line 10 and Column 6, line 63-Column 7, line 42) wherein the diazotized surface comprises a siloxy diazotized surface and wherein the siloxy comprises an amine diazonium group (Column 7, line 40-50). Hirschfeld further discloses the diazonium "comprises" p-diazoniumphenyltrimethoxysilane (Column 4, lines 50-66) and they further teach the compound at pH8 which suggests the compound is a salt. However, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made that at pH8, the NH_2 group of Hirschfeld would exist as a salt.

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Conclusion

11. No claim is allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (703) 306-5878. The examiner can normally be reached on 6:30 TO 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (703) 308-1119. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 308-8724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.



BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
August 20, 2003